THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER.

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To Our Readers—The Magic Lantern: Its Construction, Illumination, Optics, and Uses. Chap. 1.—Various Names by which the Lantern is Known—Diagram Slides without the Aid of Photography—The Smell of Oil in the Lantern—Enlarging on Permanent Bromide Paper—Transparencies on Gelatine Plates—Projection—Moonlight Effect—Titles on Photographs—Early Photography and the Lantern—The Magic Lantern in Photographic Studios—Explosion of a Gas Cylinder—Projected Pictures—Applications for Patents—General Wants and Sales—Exchange Column—Notes and Queries—Selections.

Notices.

THE *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 15th of every month, price One Penny, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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Editorial communications must be addressed, The Editor; advertisements and business communications to Taylor Brothers, care of the Publishers, Dorset Works, Salisbury Square, Fleet Street, London, E.C.

Notes.

AMONG those who are employing the optical lantern for illustrating technical lectures is Mr. Michael Reynolds, who uses it for demonstrating his lectures on the locomotive.

* * *

WE note some changes in the photographic world of journalism. Mr. Thomas Bolas has resigned the editorship of the *Photographic News* and has started a paper of his own—*The Photographic Review*. Mr. W. H. Harrison takes the vacant chair.

* * *

MR. T. C. HEPWORTH, the editor since the first of *The Camera*, joins the editorial staff as associate editor of *The Amateur Photographer*. We note that the last-named journal has removed to commodious premises in Creed Lane, Ludgate Hill.

* * *

MR. W. M. BAYNES, of Brajanza, Torquay, sends us a timely communication upon an important subject—namely, of an easy method of darkening a room for lantern exhibitions during daylight. This will be found in another column.

* * *

WHAT is the proper form for a reflector? This is answered in another page by Mr. George H. Slight, the superintendent of the Trinity workshops, where all things pertaining to lighthouses and other projections are manufactured.

* * *

WE hear from Mr. Wormald that it is his intention shortly to bring out a fourth edition of his useful book, *The Practical Index of Photographic Exposure*.

* * *

EIKONOGEN is the name given to a new developer which Messrs. Marion intend to introduce during the next fortnight. As they have promised to send us a sample, we will have the pleasure of reporting upon it in our next number.

Lantern Slide Statuary.

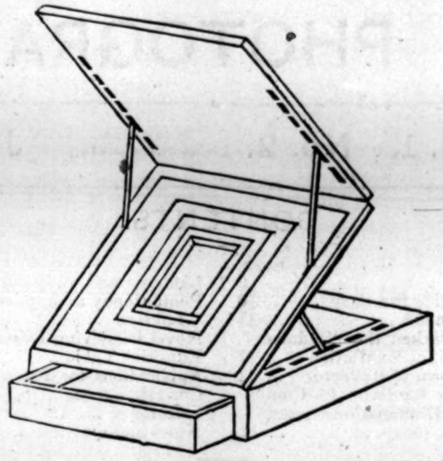
To those who have seen an ordinary printed out photograph only of a piece of statuary, there remains a great treat in store if an opportunity is afforded of viewing it upon the lantern screen under the best conditions. When projected upon the screen in the manner to be described, a considerable degree of brilliancy and rotundity are imparted to the figure, whilst the drapery folds appear to have a crispness and depth not attainable in the ordinary printed-out transparency.

We recently inspected two lantern slides, both of which were printed from the same negative and projected upon the screen. The one being printed with its natural surroundings, the straggling foliage being produced with great vigour, considerably detracted from the piquancy of the image which was the subject, by reason of the eye wandering from one part to the other. When the eye takes in the subject only, it is reviewed with less fatigue, and is more readily and thoroughly impressed upon the mind. The second picture alluded to had the back-ground and surroundings completely blocked out, the white statue appearing upon a dead, black ground, the great contrast of which enhanced the whiteness and brilliance of the figure.

The means by which this preparation of the slide may be effected, though not difficult, is somewhat tedious, but the amount of pains expended upon it is amply compensated by the ease and pleasure which is imparted to the onlooker when beholding it upon the screen in enlarged dimensions, the impression being created that the statue itself is before the spectator illuminated to the greatest advantage.

A transparency having been produced by the ordinary photographic means, it is placed upon a suitable support in order to enable the light to be transmitted through it, whilst blocking out the back-ground.

One of the best supports for this purpose is an ordinary photographer's retouching desk, having a reflector capable of being inclined to any desired angle. By means of a camel's hair brush, previously charged with a dense black varnish, the back-ground is blocked out or painted over, commencing at the extremities of the glass, and continued until within a little distance of the lines of the statue. The outline of the figure is then carefully lined with china ink, and the intervening portion filled in. There being only a small part of clear glass between the background, already spoken of and the figure, all the attention will be centred upon this, the most important step in the work, for upon the sharpness of this line depends the amount of success attending the operation, for which purpose it is well to use a magnifying-glass, and to be careful that the brush is kept full of the varnish. It is necessary that the brush be lifted as seldom as is consistent with the nature of the outline, and never during the formation of a straight or slightly curved line, for although to the professional the even junction of the lines will be a matter of no difficulty, it is by no means an easy matter for the tyro to again continue it without encroaching a little on the uniformity of the line. Certain angles will readily suggest themselves as being the most desirable parts at which the brush may be lifted; but at all times it must be remembered that the formation of even lines should be aimed at, and care taken that they are not of a serrated character, as all inequalities will of course be enlarged in the same ratio as the picture when projected on an enlarged scale upon the screen, by means of the lantern.



* * *

A PHOTOGRAPHIC exhibition is to take place at Hamburg during the summer, under the auspices of the Hamburg Photographic Society.

As July is the month when the environs of that town are at their best, it is expected that there will be a large influx of visitors.

AT a recent meeting of the Liverpool Amateur Photographic Association, Mr. F. T. Paul, F.R.C.S., stated that he thought the value of photo-micrography had been much exaggerated. Although for low powers he esteemed it invaluable, yet when very high powers were employed it was preferable to make drawings. He used a microscope with a short body, removing the eye piece, thus gaining magnification by increased length. He employed a long focussing camera. In the matter of plates and light, he preferred a fairly slow ordinary plate and a blow-through jet with a small diaphragm.

IT has been arranged that the Photographic Convention of the United Kingdom, will be held during August at the Great St. James' Hall, Piccadilly, W. A large display of photographic apparatus and optical lanterns will be held. Papers will be read by the greatest scientists of the day, and the optical lantern will be employed largely. A number of varied entertainments will also be held. The names of Lord Rayleigh, the Archbishop of York, Sir J. Linton, Dr. W. Huggins, Mr. Vicat Cole, Professor Dewar and others appear in the list under whose patronage the convention will take place.

TECKTOQUINONE.—A Rangoon chemist has discovered a substance that can take the place of hydroquinone in a very economical matter. This substance is found in the resin of teek wood, and has been named tecktoquinone.

◆

How to Darken the Windows for Daylight Exhibition.

PROBABLY many of us have been present at lantern exhibitions that have not been, to say the least, a complete success, owing to windows not sufficiently darkened to prevent the entrance of brilliant afternoon sunlight. Very efficient and yet inexpensive shutters can be made by fitting to each window a light wooden frame, covered with two thicknesses of brown paper. Some years ago I had a set of such shutters made for a room, in which I give occasional lantern exhibitions, and which is lighted by ten windows. When not in use the shutters are stowed away, and when wanted each is fastened in place by two buttons fixed to the window frame.

They are easily handled, have a neat appearance, and have proved very useful. W. M. BAYNES.

Correct Form of Reflector.

WHEN a reflector is used for throwing out a parallel beam of light from a lamp it is made parabolic, and its action is shewn in Fig. 1, in which *a* is a lamp, and *b* the reflector. All the rays which reach the surface of the reflector are reflected into one parallel beam, as shewn by dotted lines. The rays which pass the reflector in front diverge in all directions, and if a lens *c* be placed in the axis of the reflector, it will intercept a cone of such rays due to its size and position, and assuming it to be of a correct form, it will refract those rays into a parallel beam, but the rays from the reflector, which are already parallel, would converge to a focus *d* after passing through the lens; and if a lantern picture were placed beyond the lens, the rays which came from the reflector would nearly all be dispersed without reaching the projecting lens, and consequently would do little or no good in illuminating the picture, while for lighthouse purposes those reflected rays would be entirely lost.

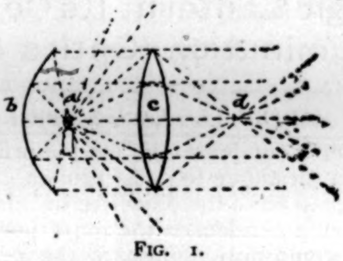


FIG. 1.

For lighthouse purposes this loss is prevented almost entirely by using a spherical instead of a parabolic reflector, exactly concentric with the light of the lamp. This arrangment is shewn in Fig. 2, where *a* is the lamp, *b* the reflector, and *c* the lens, as before.

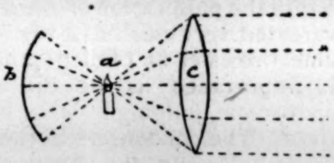


FIG. 2.

In this case, the front rays, which reach the lens, are refracted into a parallel beam, and the back rays to the reflector are reflected to the flame, and through it to the lens, thereby increasing the power of the parallel beam, without any loss from divergence.

In the lantern, the beam of light from the condenser is not strictly parallel, as it must converge on the projecting lens, but the same principle can be applied and holds good in both cases.

In all lantern arrangements of reflectors and condensers there is a large amount of light lost between the reflector and the lens, and probably such loss is practically unavoidable; but for lighthouse illumination the whole of this light can be utilised—at least in theory—and one way of doing that is by the use of Stevenson's Holophote, in one form of which a *hemispherical* silvered reflector is used for collecting the whole of the back rays, which, together with all the direct front rays, pass through a kind of hemispherical lens, composed partly of reflecting and partly of refracting rings of glass, which combine the whole into one powerful parallel beam. Such an arrangement, although beauti-

fully adapted to lighthouse purposes, would be unsuitable for the lantern, not merely on account of its cost, but from its delivering the light in a number of rings, like tubes one within the other, with dark lines between them, which would be disagreeably evident when projected on a screen.
GEO. H. SLIGHT.

The Magic Lantern: Its Construction, Illumination, Optics & Uses.

CHAPTER II.—CONDENSERS.

THE object of a condenser in the lantern is to cause the light from the flame to pass through every part of the transparency on to the objective or image-forming lens. Without a condenser the most powerful lamp in the world would only illuminate the centre of the picture.

Condensers are formed of one, two, and occasionally of three or even four lenses, according to the work they have to do. The cheap toy lanterns have a single condenser only, those in common use are double, while a still higher class used in scientific projections have three or four. In one of his memoirs on the optics of the lantern, Mr. J. Traill Taylor records how the late Mr. T. Grubb made a condenser of five inches diameter so perfect that every ray which was transmitted through it from the lime cylinder could be sent though a quarter inch microscopic object glass. But such a high perfection is not required in ordinary lantern work.

It is difficult to say at what stage in the history of the lantern the necessity for a condenser became apparent; but in some of the early treatises on optics in which any description is given, and even at such a late date as that of the publication of *Brewster's Optics*, the lantern is treated very much as a toy. It is evident that at that time Brewster had failed quite as much to appreciate its importance as he did that of the achromatic microscope, judging by what he says and a drawing he gives. The condensers in those days consisted of a single bull's eye, the object glass being a simple convex lens.

But vast indeed have been the strides made since these times, and from a toy the lantern has become a philosophical instrument.

Formerly it did not seem to be considered a matter of much importance whether the condenser was interposed between the light and the picture, or was located outside the latter altogether; for in an old drawing it is found that no lens whatever comes between the lamp and the picture, but that the flat side of the bull's eye is immediately outside of the slide, and brings the diverging rays to a point on the object glass after they have passed through the slide. But since these times of old, lantern opticians can say, *Nous avons changé tout cela.*

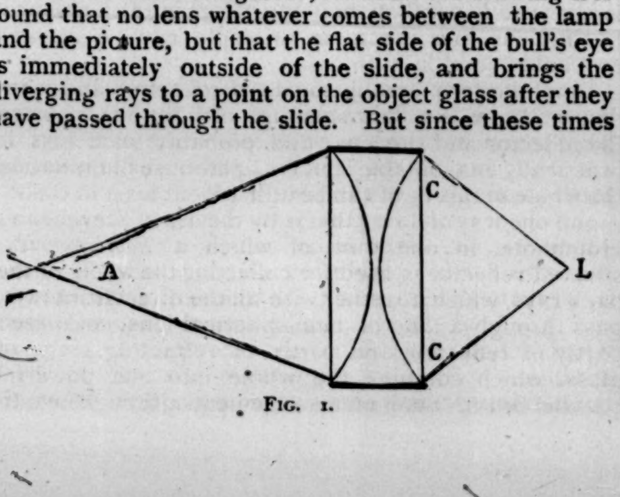


FIG. 1.

The condenser most in use at the present date is formed of two plano-convex lenses mounted close together, the flat sides being out as shown in Fig. 1, in which the light L is received upon the flat surface of CC, the nearer of the condensers, and is eventually projected to A, where the object glass must be placed.

These were first brought popularly into prominence by the introduction of the Marcy Sciopticon into this country, previous to which the Herschel form was used in all the best lanterns.

The Herschel condenser is formed of two lenses, one being either plano-convex or meniscus, the other being a double convex, as shown in Fig. 2.

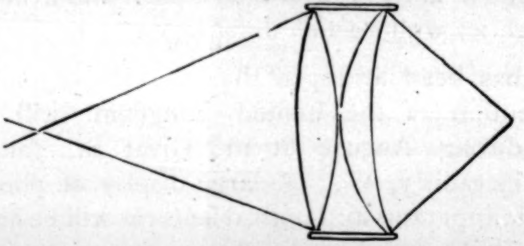


FIG. 2.

The plano-convex lens is made of flint and the other of crown glass.

The best form of the two-lens condenser is that modification of the Herschel class, which was introduced a few years ago by Mr. J. H. Dallmeyer. It is shown in Fig. 3, and consists of a plano-convex flint lens, with a crossed lens of crown, both made of Chance's optical glass.

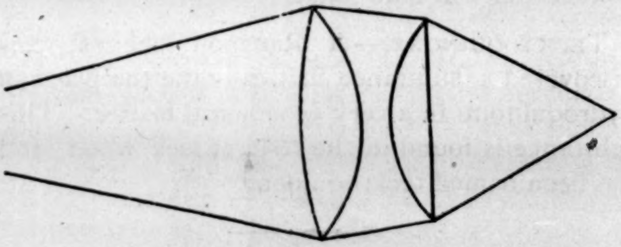


FIG. 3.

This brings the rays of light from the lime to nearly a point in front, and distributes them evenly over the disc, which can be also done by the Herschel condenser, although in not quite such a perfect manner, owing to the symetrical surfaces of its double convex.

At first sight Dallmeyer's condenser looks like the common one in every day use in ordinary lanterns, shown above in Fig. 1; but there is a wide difference between them, for in the last mentioned the two plano-convex glasses are similar in all respects, and are made of plate glass, while in Dallmeyer's the first only is plano-convex, and is made of flint; and in its second lens both sides are curved unequally, so as to bring the rays of light to a point in front, which it is not possible to do by the other form. Added to this the popular symmetrical condenser is of a green tint, which although of little import in making photographic enlargements, yet is objectionable in the ordinary projection of slides on a screen, as of course it detracts from their purity.

Many double condensers which act badly, and do not illuminate the slide they are intended to do, can be greatly improved by unscrewing them, so as to set them further apart from each other.

Triple Condensers.—In America a few of the highest class lanterns have condensers made of three lenses. Condensers of this nature have been advocated for many years in this country by various writers, but their extra expense has probably prevented manufacturers from making them unless to special order.

Dr. Henry Morton, of Philadelphia, the founder and president of the Stevens Institute, is entitled to a leading share in the honour of advocating and introducing in that country a triple condenser of his own calculating, which is open to the world to make. In this, all three glasses are plano-convex; the two first have their flat side next the light, while in the third the flat side is next the transparency. Professor Morton's condenser is said to include a cone of light of the great angle of 75 deg.

Of four-lens condensers that of Dr. Cresson is generally recognised as the simplest and best. Like Dr Morton's it too is American. Fig. 4 shows the light-collecting lenses; a fourth lens, not shown in the diagram, receives the parallel rays which are thrown on it by the others.

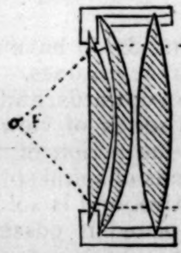


FIG. 4.

When condensers are of a large size, and are intended mainly for producing enlargements, great economy of space results from making them of a rectangular instead of a circular form.

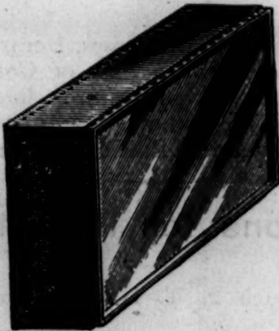


FIG. 5.

This form has been patented by Mr. W. C. Hughes, and is shown in Fig. 5 above.

* * *

Lanterns and Accessories.—I.

THERE is every sign that the lantern is in a fair way to become not only a valued treasure in every household, but the great demonstrating educational instrument of a near future. It is still in its infancy, and there is much improvement wanted before it will attain this full and complete development.

In the first place, how few operators there are who, with the most perfect apparatus, are capable of collecting a large audience and so thoroughly interesting them that they want to come again. It is not that there is any specially fine quality in the slides the successful exhibitors show, but it is primarily due to them being thoroughly well put on the screen, with the greatest possible attention to many apparently little but really important details. But when all this is thoroughly well done, the real success is measured by the tact of the lecturer in getting his hold on the audience.

It is rather a curious thing that for the many years which have elapsed since the Polytechnic Institution in Regent Street was closed, there has never been a daily exhibition of slides for a winter season. The only daily ones have been those at the two photographic Exhibitions at the Crystal Palace.

As a rule, the most successful exhibitions are those where the limelight is used, usually with a triple lantern showing dissolving views, interspersed with effects. These will doubtless continue to all time, for it will always be delightful to children, and they will not be likely to fail to come forward in ever-increasing quantity to support the exhibitors. May these go on and prosper according as they deserve.

Still there remains the far larger class of possessors of lanterns, more or less complete, who all aspire to amuse, if not to instruct, their little circle of friends and acquaintances, and to whom the hiring even of a limelight lantern must be impossible.

For this daily increasing class the halcyon days of lantern evenings will come when a light of fifty standard candles shall be obtainable with not greater heat than an ordinary gas burner or single paraffin lamp. It need not be more white than a good gas flame, but it must be small, not bigger than a hazel nut or a small marble. Fifty standard candles is about the real maximum light given by any of the modern paraffin oil burning lanterns in the market. There are very few which will give this average for a whole evening, even in the hands of experts. They can be safely judged by the number of wicks they have, the more wicks the less the average light will probably be.

It may also be confidently predicted that the smaller the point of light—and this is certain to be the object aimed at by inventors—the more unsatisfactory the result will be. For this reason, with a point of light no slide made by hand would bear the crisp definition which would then be obtained with the most ordinarily fairly good lens, but the dust spots would be the most prominent objects in the picture. It would, on the other hand, be extremely valuable for enlarging natural objects, such as insects, leaves, or wood sections.

In the meantime, I class myself among those who have to be satisfied with the oil burning lantern, and therefore want to point out some of the shortcomings, not of the lanterns, but of the accessories, more particularly of the slide-holders.

I will not enter into the question of those slide-holders which are necessarily sometimes required to take other than the English regulation standard size, 3¼ inches by 3¼ inches, because for the moment I will assume that this shall be the size in future, they will be, if bought of an English maker, and must be, if made at home.

The most general one is a frame having a groove top and bottom, in which the slides can travel. They are always entered at one end and taken out at the other. As they are generally made exactly 9¾ inches long, it is evident that if three slides are in the holder the middle will be exactly centred if the two outer ones are exactly adjusted to either end, which is quite easily done by the finger of each hand. Practically, there are never three at once. The first one has to take its chance, unless the operator takes the precaution of adjusting it before the lens is uncovered. A very common occurrence is the neglecting it; then the slide is jigged backwards and forwards on the screen to get it centred, and it augurs very badly for the rest of the show, and so it well may, for it is very likely that two thin slides will happen to follow one another, and instead of the second one pushing the other before it, it will slide over it and possibly jamb in the groove. Who has not frequently seen exhibitors perform this trick, at places too where better things were expected?

One spring in the upper groove in preference, made to press towards the condensers in the centre of the holder, and two similar springs in the lower groove, one in the centre and the other just about half an inch from the entering end. This end, by the way, should have the back part of the wall of one of the grooves cut away, top or bottom at will, but not both. for more easy entering of the slide. If the springs are not too strong they will be quite noiseless; they are best made of watch spring. To fit these in the groove a fine diagonal cut is made with a saw in the wall of the groove, not much thicker than the spring to be inserted. A little hard spirit varnish dropped in will hold it firmly. A somewhat wider cut must be made in the opposite diagonal direction to take the free end. The springs may be from 2½ inches to 3 inches long, and the cuts made to suit, but the fixed end had better be towards the entering end of the holder.

In the first case—the holder without springs—the pictures are rarely in focus, the slides have too much play in the grooves, which are usually unnecessarily wide, and therefore a thin one will not unfrequently be much out of perpendicular; the result is that the audience is quite exhausted in less than an hour. In the second case, with the same holder, fitted with springs, the effect is better and less noticed by the audience, but the change must be made quite slowly and regularly, as well as stopping exactly in the centre of the screen, or the spectators will rise.

GEORGE SMITH.

Photography as Applied to the Lantern.

DURING the past few years, the number of those who interest themselves in the lantern and its capabilities has been vastly increased by the sudden popularity of the art of photography. Amateur photographers are now to be found in every town in the kingdom, and they are beginning to find out that there is no better method of showing their friends the pictures which they have taken than by means of the optical lantern. The same instrument, too, as it offers a means of making permanent enlarged copies of small photographs, serves with them a double purpose.

T. C. HEPWORTH (*Book of the Lantern*).

Novel Dissolving Effect.

WITHIN a circle of, say, 9 inches diameter a swan is drawn with indian ink, and shaded to represent the ordinary bird, water and the surrounding scenery being also sketched in. The paper is left white on all portions which are to be coloured or left transparent.

Two transparencies are next taken of the usual lantern slide size.

Colour the sky, water, scenery and beak of one slide appropriately, and paint the plumage and the reflection in the water black; and in the other slide stop out all but the bird and reflection. When the first picture is shewn on the screen the swan will appear black; and when the second lantern, containing the other slide, is turned on, the plumage will gradually become white, whilst the scenery will not undergo any change.

P.

Editorial Table.

MESSRS. SAMUEL FRY & CO. have introduced some novel forms of transparency frames. They are made in all sizes, from lantern upwards, and are constructed to hold either one or a series of views. In one kind the picture is held by the action of a screw, and in another variety by means of spiral springs. The whole thing is neat and effective, and is sold at a moderate price. Being nickel-plated it possesses advantages over lacquered frames. As a means of placing or suspending one or more lantern slides in a window, they will be very useful.

A NOVEL instrument (the Faciometer) for measuring a person for spectacles has just been brought out. By applying it to the face, and adjusting various screws, the exact relation of the eyes to the nose, and width of temples, are shown upon a scale. The agents for this country are Messrs. Sharland, Thavies Inn, London.

WE have received from Messrs. Bemrose and Sons, Chetwynd Street, Derby, a folio of Collotypes, comprising specimens of portraiture, landscapes, and examples of work for commercial illustrations or art catalogues. They are all that can be desired.

Applications for Patents, 1889.

No. 3719.—March 2, T. Howell, "Improvements in illusion devices."

No. 3818.—March 5, W. Leach, "Improvements in the stage, which is used as a part of his lantern microscope, known as Leach's Oxyhydrogen Lantern Microscope."

No. 3966.—March 6, A. T. Clarkson, "Improvements in telescopes."

No. 5114.—March 25, J. Greenbyry, "Improved apparatus for displaying photographs or cards."

No. 5430.—March 29, C. Lantz, "A new and improved apparatus for automatically exhibiting pictures and the like upon receipt of a coin."

No. 5542.—April 1, A. R. Wormald, "An improved stand, or frame, for exhibiting photographic lantern slides, negatives, or other transparencies."

No. 6999.—April 26, C. Gray and H. Kemp, "Improvements in magic lanterns."

No. 7658.—May 7, A. Wrench, "Improvements in telescopic fronts for optical lanterns."

No. 7897.—May 11, E. S. Bruce, "Improvements in apparatus for showing the illusion produced by the persistence of vision to large audiences."

No. 7983.—May 14, W. Griffiths, "Improvements in cameras for making lantern slides or copying photographic pictures."

No. 8085.—May 15, H. W. Jones, "Improvements in the production of developers for photographic use."

No. 8474.—May 22, W. B. Bolton, "Improvements in holders or carriers for flexible sensitive photographic films."

No. 8632.—May 24, A. D. Chapman, "A collapsible pneumatic focussing chamber."

No. 9198.—June 3, S. Marcus and B. Fuchs, "Improvements in albums for photographs and the like.

No. 9403.—June 6, A. Barr and W. Stroud, "Improvements in apparatus for copying by photography."

No. 9627.—June 11, E. Mawson and C. Winter, "Improvements in photographic shutters, especially adapted to cameras of the detective class."

No. 9825.—June 15, L. E. Perken, F. L. Perken and A. Rayment, "An improved washer for photographic plates, films, prints and the like."

No. 10131.—June 21, F. Greene and M. Evans, "Taking photographs automatically in a rapid series with a single camera and lens."

No. 10133.—June 21, W. P. O'Reilly, "An improved instantaneous shutter for photographic purposes."

No. 10145.—C. M. Newton, "An improved photographic detective camera and plate changing box."

◆

Correspondence.

DEFECTIVE LANTERN DISCS.

[*To the Editor.*]

SIR,—I am glad to see that at last we have got an organ for the lantern, and in anticipation of the time when I hope to send you some jottings for its columns, I desire to ask a question or two, to which I hope you will reply, this the rather as I have some idea I do not stand alone in my lack of knowledge.

My sciopticon lantern, a good useful one, selected by and obtained from the late W. B. Woodbury, gives me a disc which is lighted with great evenness, with the exception of two dark strips down the centre, which I am told nothing can cure so long as I use a two-wick lamp edge on to the condenser. In the autumn of last year I acted on a suggestion made in one of the photographic journals and had a mixed gas lime-light jet placed in my sciopticon, together with a condenser of shorter focus in order to get a wider angle of light, and here is where my trouble comes in. While with my old two-wick lamp I certainly got a slightly brighter disc, with my lime-light I do not get that uniformity of lighting in the disc which I desire. I have every adjustment possible. I can raise and lower the burner, turn it from side to side, make it approach to or recede from the condenser, and yet with all my care the edges of the disc are uniformly imperfect. This is my trouble; what is the cause, but above all wherein lies the remedy?—Yours, &c., THE VICAR.

P.S.—Pray inform your readers that Scarborough, where I am at present enjoying the marine breezes, will be found a most lovely and useful centre of operations for obtaining pretty scenes for lantern slides.

[The fault mentioned is a rather common one. It is caused by giving to four-inch condensers curves which are only adapted for three and a-half inch ones, this being done to increase the angle of light. This subject will be found treated somewhat fully in an article on condensers in this number. A cure in this case will be effected by removing that one of the condensers which is next to the slide, and substituting one having a rather longer focus. An improvement may also be made by separating the parts of the condenser so as to have a greater space between the two plano-convex lenses of which it is formed. A condenser which acts fairly well when used with a large flame may quite break down when the light is reduced in size as is the case in the mixed gas burner.—ED.]

MEGASCOPE.

[*To the Editor.*]

SIR,—Can you give me particulars of an instrument called a *megascope*, both as to its construction, size of lens, mode of using, and the light employed for its projections?

I am aware that it is an opaque projecting lantern for large representations, and it is, I believe, eminently suited for illustrating lectures. But I know nothing of its construction, nor can I find any maker; yet it is, I understand, a very simple contrivance. Any particulars will be helpful.—Yours, &c., E. C. OWEN.

Friars Stile Road, Richmond Hill.

[There are no megascopes made or sold in London, as far as we can discover. The megascope, as correctly surmised, is merely an opaque lantern, so constructed that a large volume of intense light can be thrown upon any object, such as the hand of an individual, the works of a watch or a picture, a lens of more than usual size and length of focus being used. Objects thus projected are shown in their natural colours. In our series of articles on the lantern we shall doubtless have one on the megascope.—ED.]

HUGHES' METALLIC SLIDE.

[*To the Editor.*]

SIR,—When Mr. W. C. Hughes took a patent for binding lantern slides with metal instead of paper, he surely must have known of the existence of the brass preserver in which ferrotypes are mounted at every roadside and seaside resort. How, in the face of this, not to speak of other transparency frames in the market, Mr. Hughes can sustain his patent is beyond my comprehension.—Yours, &c., P. Q.

[Mr. Hughes' binders are quite unlike those mentioned by our correspondent, and are for quite a different purpose. Therefore, in our opinion, he can sustain his patent.—ED.]

DETECTIVE CAMERAS AND ENLARGING.

[*To the Editor.*]

SIR,—Your new journal has reached here. I think it is a very good idea. Now that detective cameras are all the rage, enlarging, both temporarily by the lantern, and permanently on paper, must of necessity increase, and the optical lantern will receive an impetus; for who will be satisfied with the small pictures of most detective cameras? Therefore, anything tending to circulate knowledge on those subjects will be welcome here in New York. Wishing you every success, believe me to remain, Yours, &c.,

New York. JAMES H. HARE.

◆

WHEN one is being conveyed through scenes of a grand, charming, and ever changing character, he usually becomes, in sentiment at any rate, an artist in spite of himself. In the varying forms assumed by mountains, trees, valleys, villages or cottages, he instinctively tries to realise how these would look in a picture, and this in turn engenders the thought of how pleasant it would be if, by means of some portable photographic apparatus involving in the use thereof neither trouble nor the possession of special skill, transcripts of such natural beauties could be secured to serve as reminiscences of the trip, or for the gratification of friends at home.—*J. Traill Taylor* (*in Scovill Series*).

Selections.

A GOOD four-inch condenser will illuminate an ordinary lantern slide better to the edges than a bad four-and-a-half-inch condenser.—*T. E. Freshwater.*

⁂

WHEN buying a lantern it is well to obtain a guarantee from the vendor that the back lens of the projection combination is large enough to take in the whole of the cone of rays coming through the picture. If too small, much of the light would be lost.—*W. H. Harrison.*

⁂

HAVING had considerable experience in the United States with cylinders of large size, they seem to possess advantages over anything yet devised for containing the gases used for limelight, and except by the grossest want of care, stand pre-eminent for safety.—*J. Simpson Tomkins.*

⁂

THE optical lantern will become the great educational instrument of the future.—*George Smith.*

⁂

IT must be remembered that, in order to represent the whole of a lantern slide distinctly, the back lenses or condensers must be rather larger than the dimensions of the slide.—*H. Bielfeld.*

⁂

A DISC of six or seven feet is about right for figures, statuary, &c., to give brightness and not an unnatural size; while landscapes, &c., appear better in a disc of ten or more feet.—*L. J. Marcy.*

⁂

WHEN the amateur has made a perfect slide, varnished and protected it with a cover-glass of thin crystal, and bound it securely, he has a "thing of beauty" which will be a joy to him as long as he lives.—*Marcus H. Rogers.*

⁂

THE attempts to depict the attitudes of animals in motion probably originated with art itself, if, indeed, it was not the origin of art; and upon the walls of the ancient temples of Egypt we still find pictures of perhaps the very earliest attempts to illustrate animal motion.—*Eadweard Muybridge.*

⁂

TRY to make photographs yourselves, and see if you cannot do as well as others have done before you and are now doing all the time. It is not only that you may amuse yourselves; it is that you may learn to love and appreciate the beauty with which nature has been so abundantly adorned, and that your eyes may have a new power and see all around what you have never seen before. Too many go into the country, or even live in it, and yet never see it.—*Rev. Geo. M. Searle.*

⁂

I KNOW of no industry or art that has had more attention given to its literature than photography.—*Ed. L. Wilson.*

⁂

THE colour of the slide is entirely dependent upon taste, rich brown of Indian ink and carmine being what I have found the best.—*W. B. Woodbury.*

⁂

THE best surface for a screen is that of a plastered wall smoothly whitewashed, or, best of all, covered with a thin layer of plaster of Paris.—*W. Jerome Harrison.*

⁂

NO more enjoyable way of spending a few winter's evenings could be found than the printing off on glass the results of a summer's work.—*Ellerslie Wallace.*

⁂

IT is the task of the operator to find ways and means to make equally good enlargements from any negatives.—*F. W. Geldmacher.*

Notes and Queries.

Erratum.—In our "Selections" last month the name of Mr. T. E. Freshwater was given instead of that of Mr. J. J. Briginshaw.

The Editor has to thank numerous correspondents who have sent their good wishes and complimentary remarks respecting *The Optical Magic Lantern Journal and Photographic Enlarger.*

Received *Laterna Magica* from E. Liesegang, Dusseldorf.

R. Leonard.—If you are in the habit of cleaning your lenses and mounts in the manner you mention, they will speedily become worthless. If dust settles thickly upon the glass, blow as much off as possible, then dust lightly and wipe with a piece of soft chamois leather, but do not wipe dust off with your finger in the way you speak of, as the surface of the lens may thus be scratched by the biting properties of the dust. (2) The brass tube is polished in a lathe, and under the treatment to which you allude yours must present an uneven surface. Better get an optician to polish and re-lacquer it.

R. L. (Birmingham).—The effect to which you refer cannot be obtained with one lantern. It is necessary that two be employed. Thanks for your kind wishes.

W. Cornish, Junior, writes:—"As superintendent of a school I intend arranging for a lantern exhibition, to be held as soon as the days get a little shorter. I shall esteem it a favour if (1) you will recommend me a good subject for an hour and a-half's entertainment, and (2) the name of the best firm from whom to hire the lanterns and slides." In reply—(1) As there are hundreds of different entertaining stories to be had, it is almost impossible to recommend any particular one. (2) Consult our advertising columns, and send for a catalogue, but we cannot recommend any one firm in preference to another.

H. H.—Thanks for the description of the carrier. It is not, as you suppose, a new idea. Theoretically it possesses advantages, but practically it was useless, as it has a knack of failing to work at the time required. It was withdrawn from the market a few years ago.

Rev. G. Banding.—Yes, the screen *must* be wet if the lantern be on one side and the audience be on the other.

Pupil Teacher writes:—"If a tank be used in the lantern, and filled with water containing a small quantity of nitrate of silver, and a drop of hydrochloric acid be added, dense clouds appear. Of what do they consist, and how can the solution be again made clear?" *Answer.*—The clouds are chloride of silver. If ammonia or hyposulphite of soda be added the solution will become clear.

A. C. R.—The negative you sent us will not make a good transparency. It is over exposed and flat.

Pater.—We will communicate with you by letter.

J. Robins.—(1) We do not fully understand your question. (2) Use a lens of longer focus.

Auld Reekie.—You will find an illustration of the condenser in this issue. An article on object glasses will follow in due course.

The Shah.—If you leave the negatives for our inspection, we will give an opinion as to their suitableness for the purpose.

LUCID DESCRIPTION OF A MAGIC LANTERN.—The following is from an old dictionary: "The magic lantern is a small optical instrument which shows by a gloomy light on a wall monsters so hideous that those who are ignorant of the secret believe it to be performed by magic."